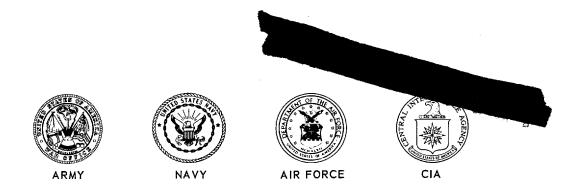
NPIC/R-1033/62 August 1962

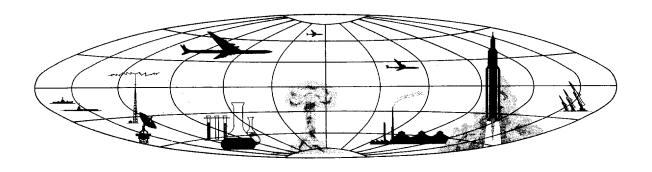
PHOTOGRAPHIC INTERPRETATION REPORT

# MISSILE - ASSOCIATED INTERFEROMETER INSTRUMENTATION SITES USSR



NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

#### **Declass Review by NIMA / DoD**



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# MISSILE - ASSOCIATED INTERFEROMETER INSTRUMENTATION SITES USSR

NPIC/R-1033/62 August 1962

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### 25X1C

## SECRET Approved For Release 2003/05/15 : CIA-RDP78B04560A000400010041-9

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#### INTRODUCTION

A total of 15 missile-associated interferometer\* instrumentation sites (including one probable and one possible site) have been identified in the USSR from aerial photography during the period

Seven sites had been observed

Tyura Tam Missile Test Range (TTMTR), 3 with the Kapustin Yar Missile Test Range (KYMTR), and one isolated site at Khutor. The extent of Soviet use of interferometer instrumentation was not realized, however, until the coverage of the Sary Shagan Antimissile Test Center (SSATC), where eight interferometers were seen. This report presents locational, mensural, and other pertinent information of the 15 sites based on a study of the photography. In some cases, extreme obliquity and cloud cover preclude detailed analysis. For comparative purposes, line drawings and photographs are shown at the same scale and orientation, where practical.

25X1D

A typical interferometer instrumentation site has an interferometer and a nearby support area. A missile-associated interferometer is composed of two perpendicular crossarms approximately 400 feet long at the ends of which are one or more domed instruments. A bunker is positioned near the center of the crossarms. A circular road approximately 1,000 feet in diameter and a circular fence approximately 1,200 feet in diameter enclose the area. Although no functions have been assigned to the buildings in the support area, one type of building -- the "Radar A" (first identified at Kapustin Yar) -- has been identified at most of the sites. The "Radar A" consists of a domed silo 20 feet in diameter with an attached building measuring Six sites have no known "Radar A", whereas two sites have as many as five a "Radar A" identified at the north end of the forward "L" at Kapustin Yar had the dome removed from the silo.

- 1 -

<sup>\*</sup>The interferometers discussed in this report have perpendicular bisecting baselines. These tracking installations are fixed, ground-based devices that employ phase-measuring techniques.

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Inside the silo was an instrument that appeared to be a Whiff-type parabolic dish. Because this is the only instance where the inside of such a silo has been seen on photography, it cannot be determined whether all such silos contain similar instrumentation.

As shown in Table 1\*, the 15 sites have many similarities -- both in the size and amount of equipment in the interferometer area and in the number and type of buildings in the support area.

Probably because of their isolation, the interferometer sites at the SSATC have more buildings than other sites. This situation probably is a result of the greater need for personnel housing and not because of a functional difference in the interferometers themselves. Further analysis of the interferometers may show a correlation between the "Radar As" (and their number) and the interferometers.

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25X1C

<sup>\*</sup>Page 39.

#### SSATC SITES

Only those instrumentation sites at the SSATC that contain an interferometer are covered in this report.

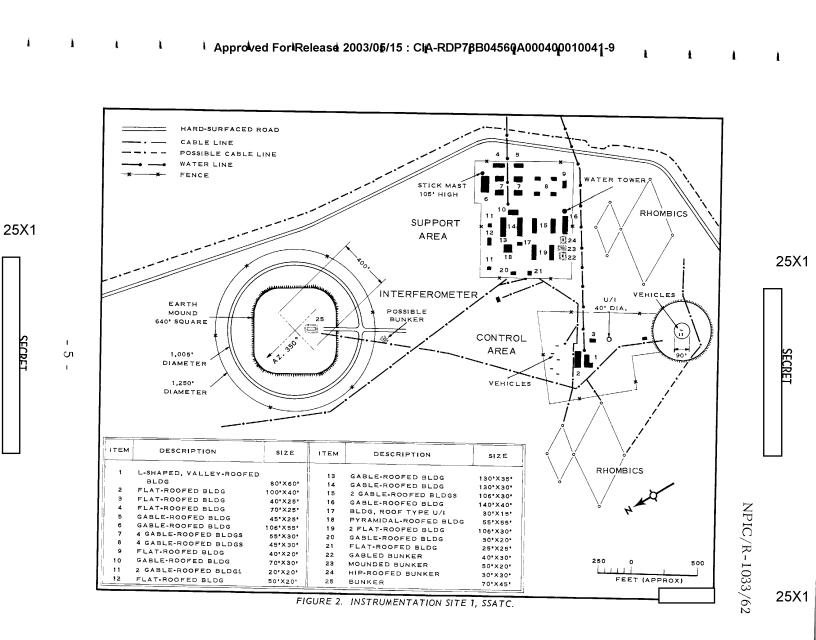
Instrumentation Site 1. Instrumentation Site 1 (Figures 1 and 2) is located on the west shore of Lake Balkhash. Unlike the other interferometers at the SSATC, this site is not in the vicinity of the impact area. The crossarms are situated on an earth mound 640 feet square. The circular road apparently is elevated to a constant height. This site is characterized by additional equipment not found at any other instrumentation sites. As shown on Figure 2, the site has four single rhombic antennas (oriented toward Moscow) and a circular concrete pad with several vehicles on it. The pad with the vehicles appears to be additional instrumentation and may be required by a functional difference between this site and the other sites at the SSATC. Site 1 most closely resembles the Khutor site, which may also have rhombic antennas in the vicinity and is definitely situated near a KRUG site.

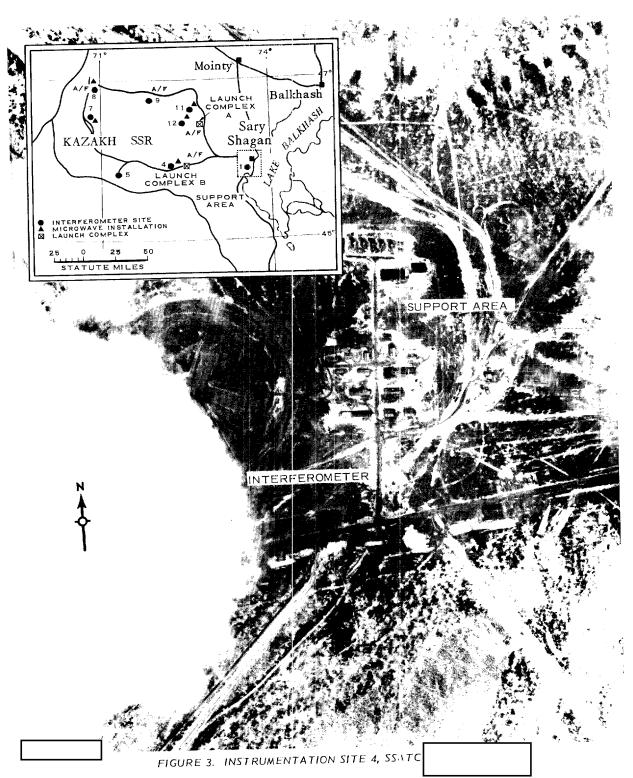
Instrumentation Site 4. Instrumentation Site 4 is visible on photography of excellent quality, although one portion of the interferometer is obscured by clouds (Figures 3 and 4). The crossarm pattern appears to be leveled earth which has been built up several feet above ground level. The circular road also appears to be built up to a constant height. The site is characterized by a group of five ''Radar As''. Adjacent to these ''Radar As'' is a building with a flat roof (item 3, Figure 4) which has approximately 24 vents or skylights.

25X1

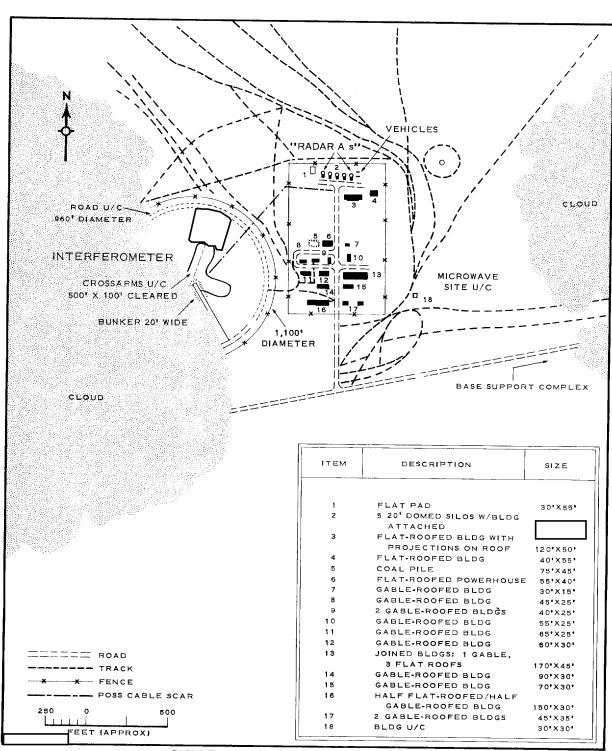
25X1D

25X1





25X1



25X1

25X1

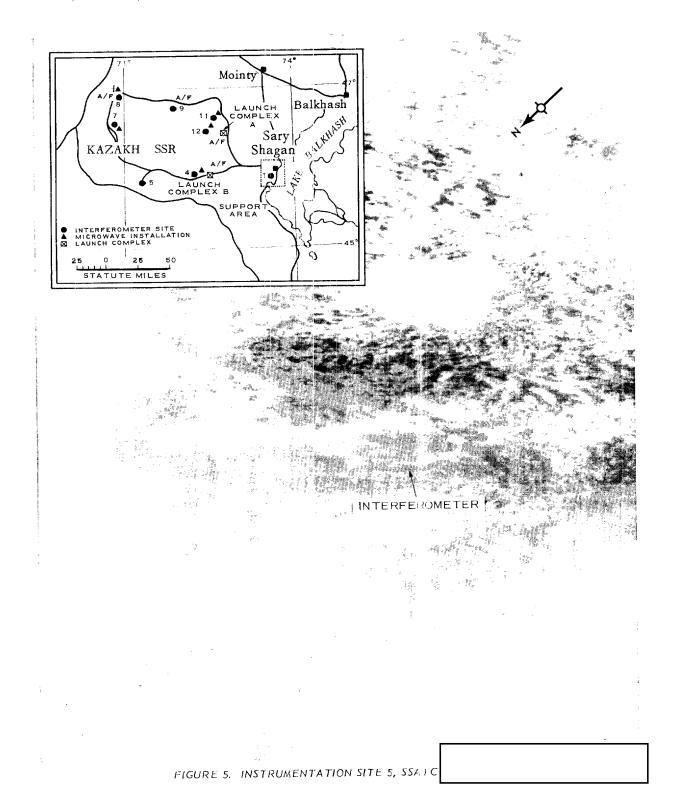
FIGURE 4. INSTRUMENTATION SITE 4, SSATC.

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25X1C



Instrumentation Site 5. Instrumentation Site 5 appears on heavily clouded, far-oblique photography which shows only the interferometer (Figure 5). The site has a circumferential road and a road leading into the probable central control bunker. It cannot be determined whether the cleared area is fenced.

Instrumentation Site 7. Excellent, cloud-free photography allows a detailed interpretation of Instrumentation Site 7 (Figures 6 and 7). A large amount of scarring is discernible in the vicinity of the interferometer, but no instruments can be seen on the crossarms. As at Site 4, the crossarm pattern is on leveled earth, and the circular road appears to be elevated to a constant height. Most of the scarring on the crossarms extends approximately 200 feet from the center of the interferometer. The site has three "Radar As". A possible cable scar connects the inner bunker of the interferometer to the "Radar As". The site also has a Token-type radar with associated vehicles and a microwave installation 240 feet from the support area. A dish is barely visible on the lattice tower.

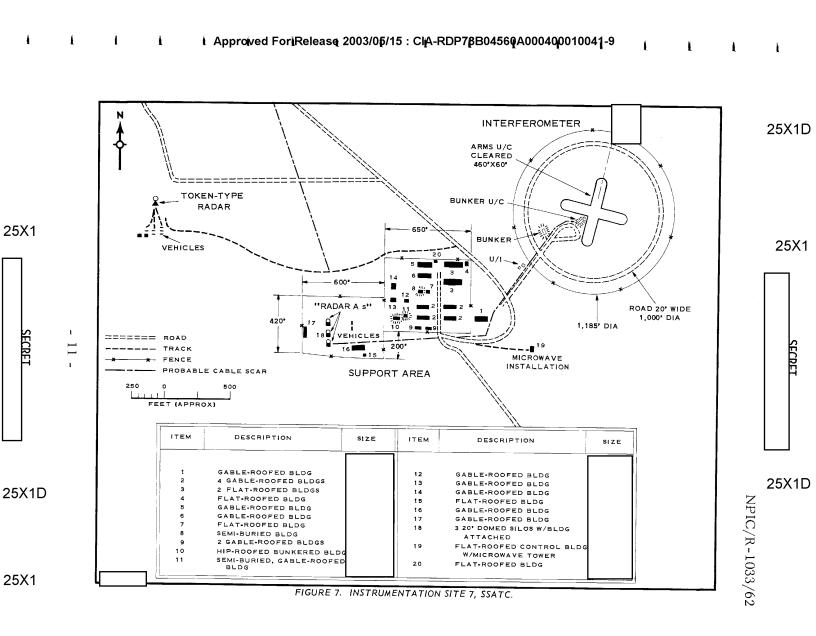
Instrumentation Site 8. Instrumentation Site 8 is larger than many of the other range instrumentation sites at the SSATC. Although the site is partly obscured by clouds, items visible on the cloud-free portions of the photography include the interferometer, at least 33 buildings, an airfield, a Token radar, a possible Bar Lock radar, a microwave installation, and numerous vehicles (Figures 8 and 9). A small unidentified instrumentation site with one building and at least four vehicles is 3.4 nautical miles (nm) south of Site 8. Although no "Radar As" have been identified at this site, additional facilities may exist in the cloud-covered portions of the site.

Instrumentation Site 9. Analysis of the buildings, the microwave installation, and the airfield at Instrumentation Site 9 identifies it as an interferometer site (Figures 10 and 11). Although cloud cover does not permit identification of the interferometer itself, on the basis of the location of

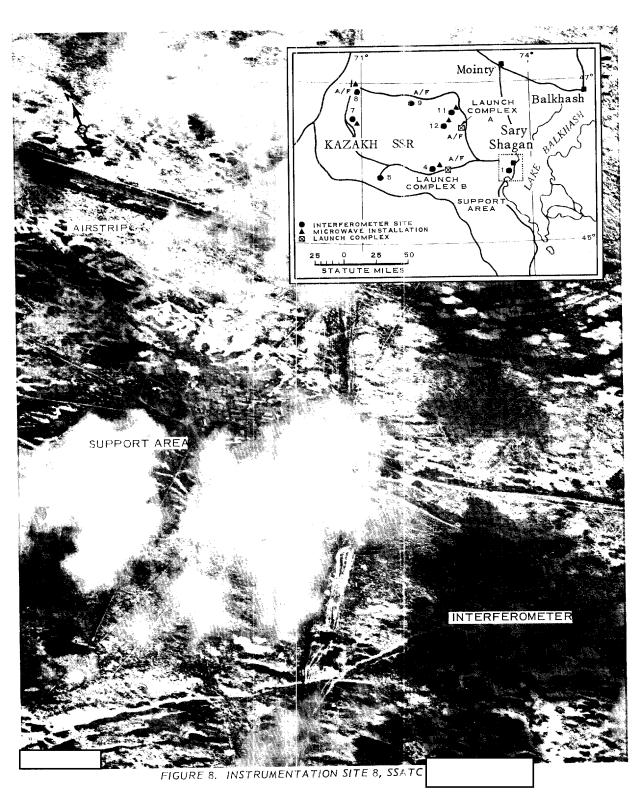
25X1

25X1D

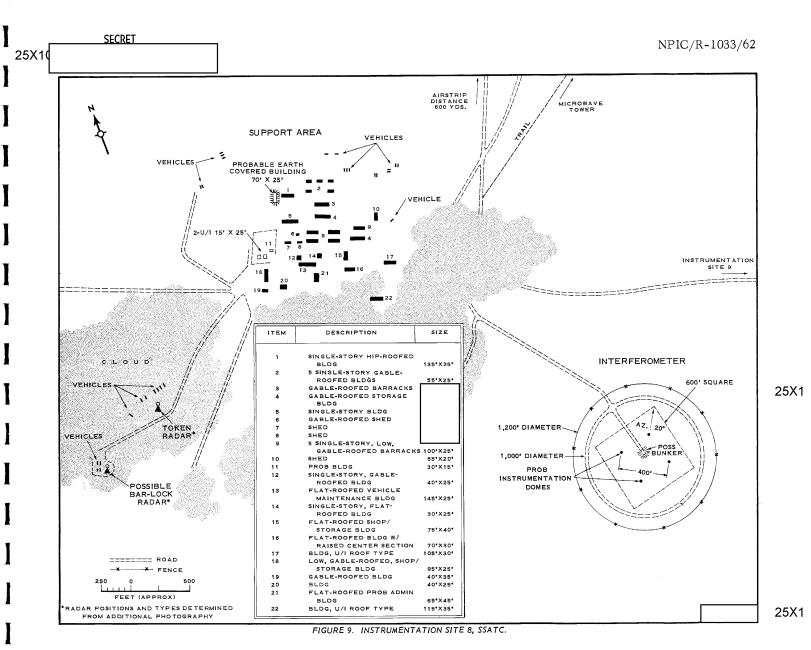
25X1



25X1



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other interferometers with respect to their support areas and to the impact area, it is assumed that the interferometer is south or southwest of the support area. The airstrip associated with this site has been described previously. 1/

Instrumentation Site 11. Deep shadows and cloud cover restrict interpretation of Instrumentation Site 11 (Figures 12 and 13). The scarring inside the fence of the interferometer indicates that construction is still underway. Like most of the other instrumentation sites, a microwave installation is located nearby. Although the "Radar As" cannot be seen, the items that are visible appear on Figure 13.

Instrumentation Site 12. Instrumentation Site 12 is located near Launch Complex A (Figures 14 and 15). Although obliquity and cloud cover prevent detailed interpretation of much of the site, the interferometer shows little construction debris and may be complete. North of the support area is a fenced area, possibly a microwave installation, which contains a building. Adjacent to this fenced area is a regular pattern of ground scarring, the purpose of which has not been determined.

- 1.5 -

25X1C

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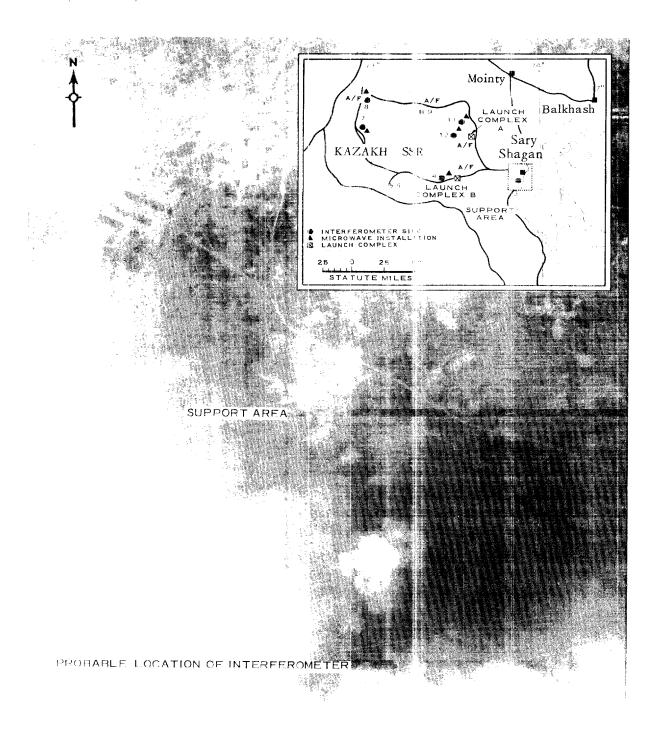


FIGURE 10. INSTRUMENTATION SITE 9 SSA 12

Ιó

25X1C

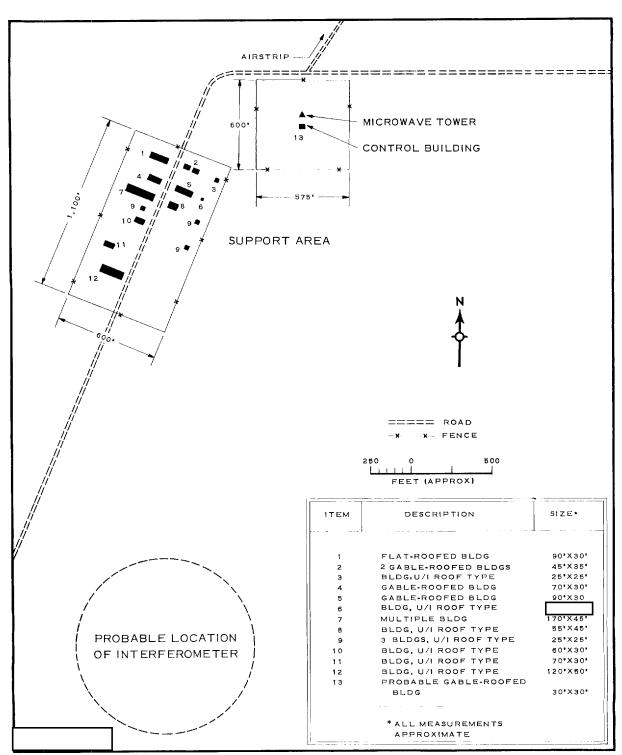
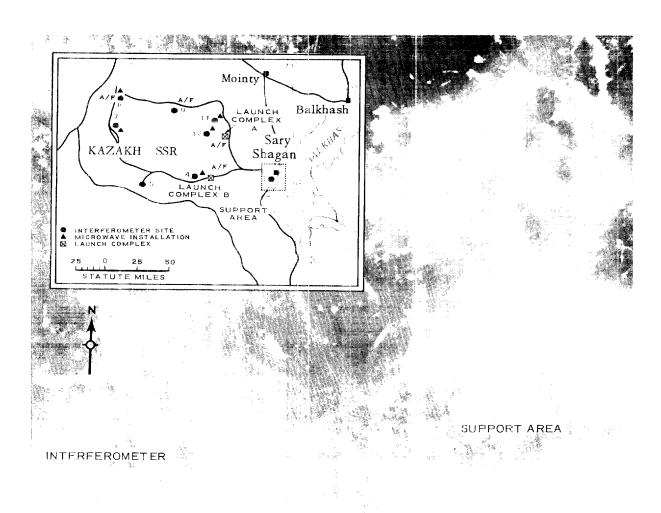


FIGURE 11. INSTRUMENTATION SITE 9, SSATC.

25X1

- 17 -

25X1

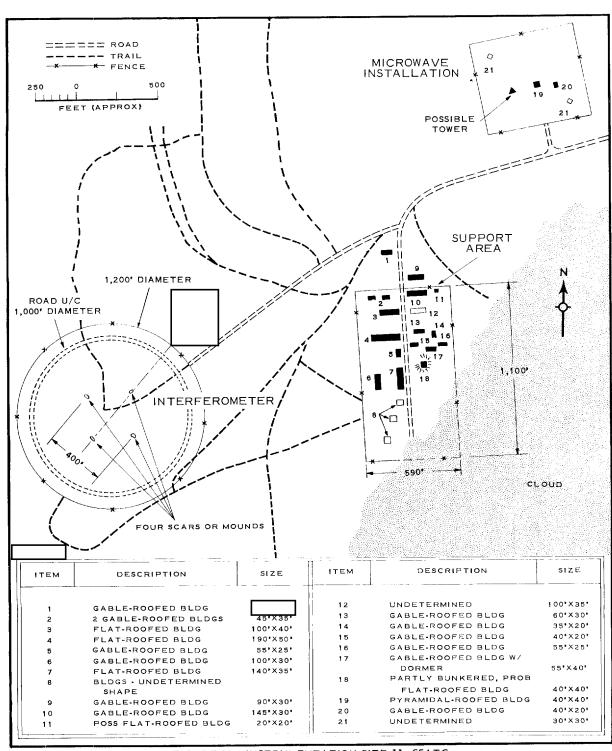


25X1

FIGURE 12. INSTRUMENTATION SITE 11, SSATC

25X1D

- 18 -



25X1D

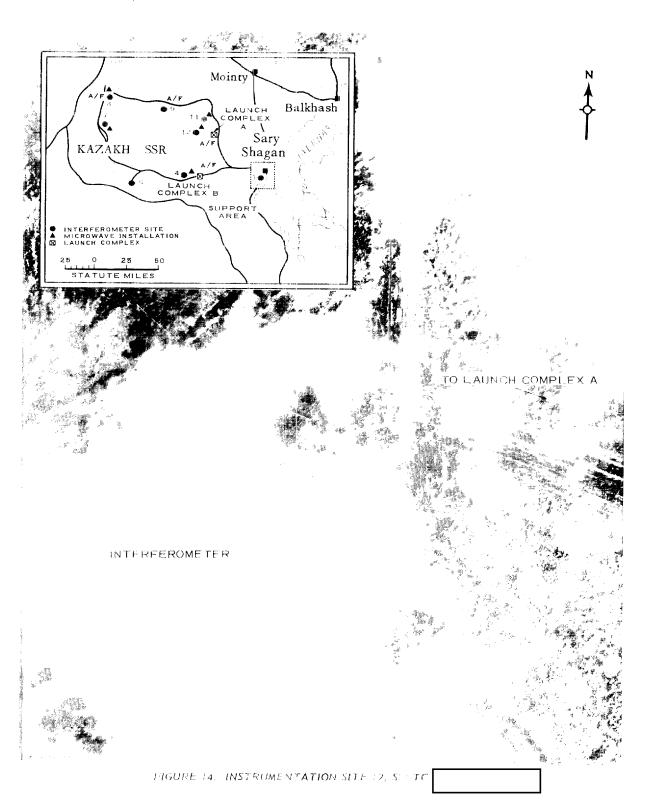
25X1

25X1D

FIGURE 13. INSTRUMENTATION SITE 11, SSATC.

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25X1D

25X1C

25X1D

25X1

25X1\_

NPIC/R-1033/62

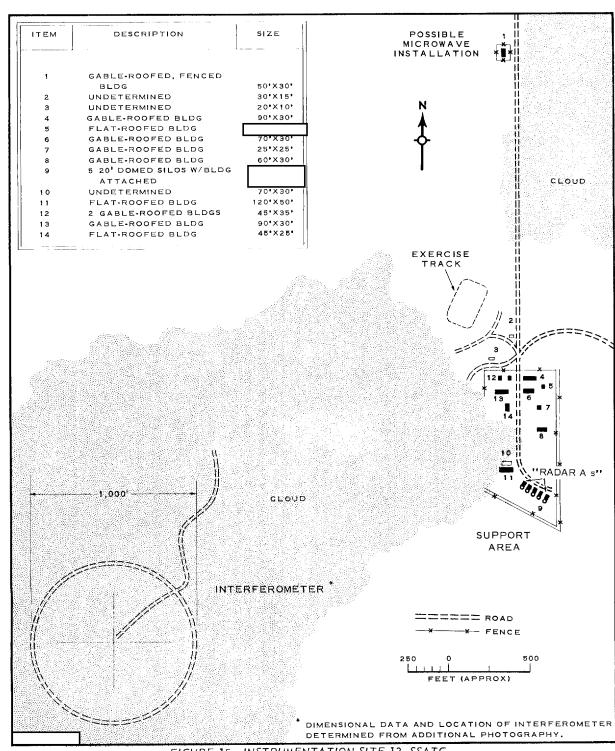


FIGURE 15. INSTRUMENTATION SITE 12, SSATC.

- 21 -

25X1

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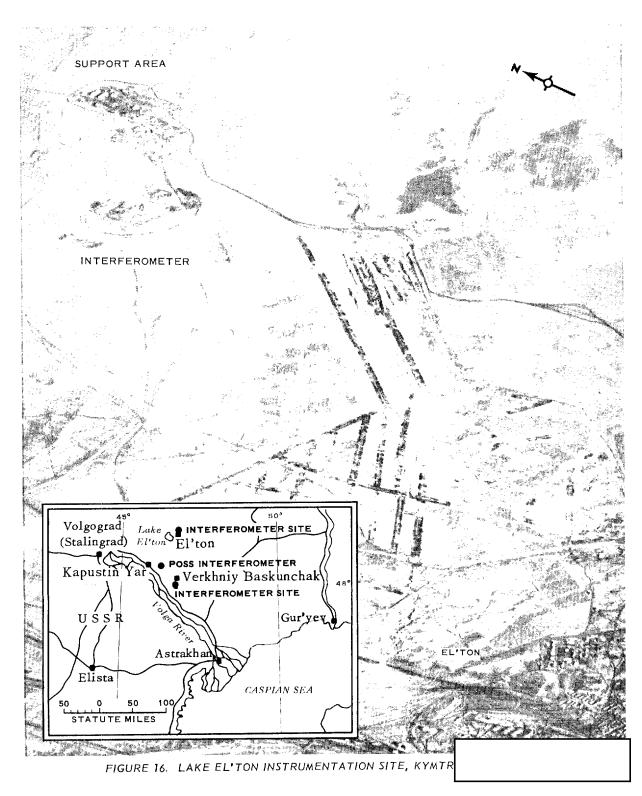
#### RYMER SEEES

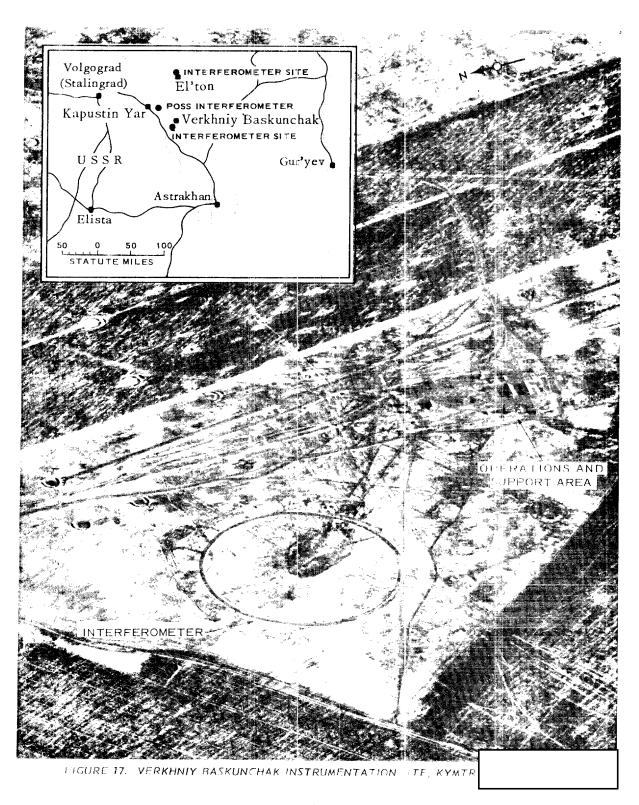
Lake Eliton Site. The Lake Eliton instrumentation site is approximately 55 nm northeast of the Kapustin Yar Ringehead. 2/ The circumferential road, the inner bunker, and the level ground pattern within the circular area are the only items clearly discernable at the interferometer (Figure 16).

Serkhiny Baskunchak Site. The support area of the verkliniy Baskunchak instrumentation site (Figures 17 and 78) is quite similar to the support area of the site at Launch Complex 'C", Kapustin Yar. Unlike the "Radar As" at other sites, the two at this site do not have the building attached to the silo. In compast to the circular roads which appear to be clevated at Sites 1, 4, and 7 at the SSATC, the road encircling the interferometer appears to be below ground level. Unlike the sites at the SSATC, the support area of his site has a minimum of housing.

been identified by the support area, which comains a "Radar A", and by the control bunker normally found near the content of an interferometer (Figures 19 and 20). This support area is suite similar to that of the interferometer at the Tyura Lam Rangehead. No crossarms are in place, and there is no scarring to indicate that the area is being leveled or that any other construction is underway. The control bunker is under construction, indicating that it may be the first item constructed at an interferometer site.

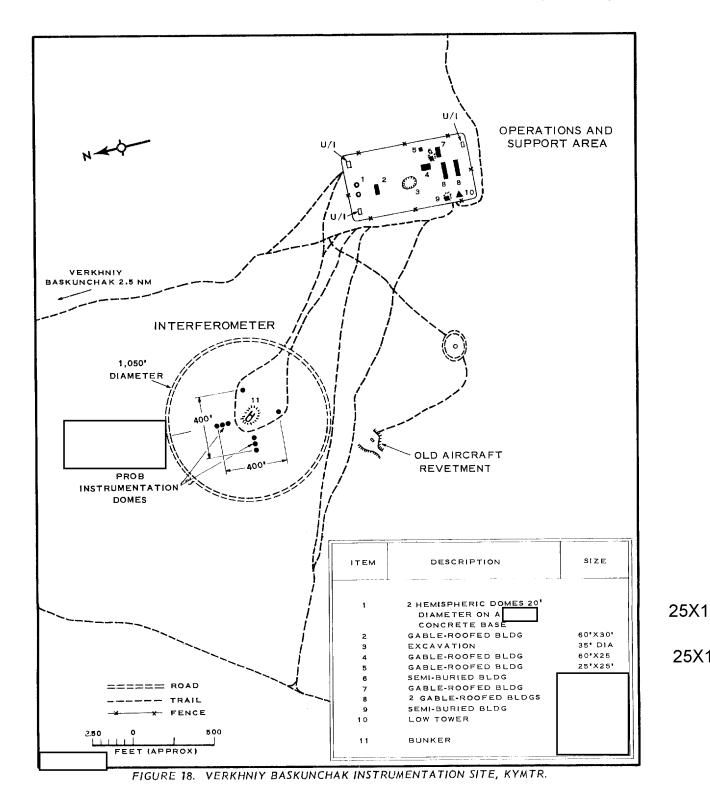
25X1





25X1D

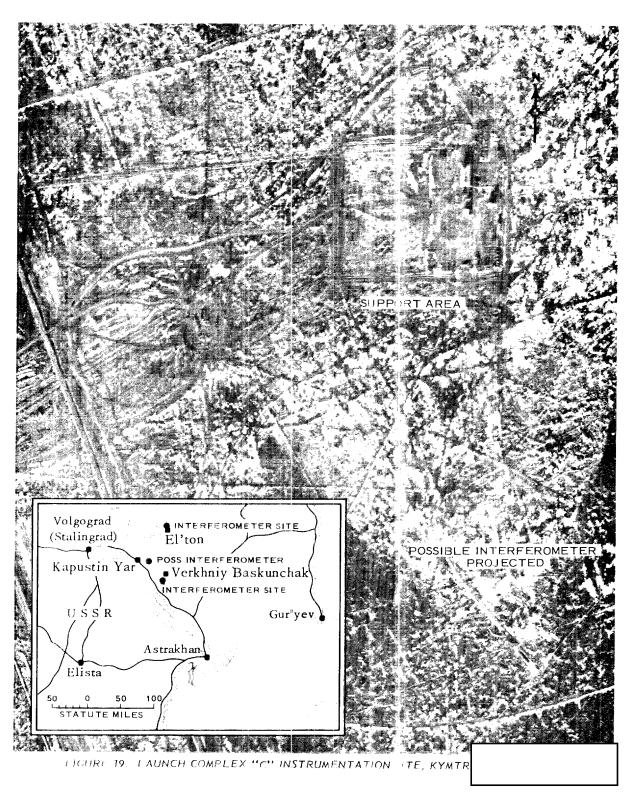
- 24



25X1D

25X1

- 25 -



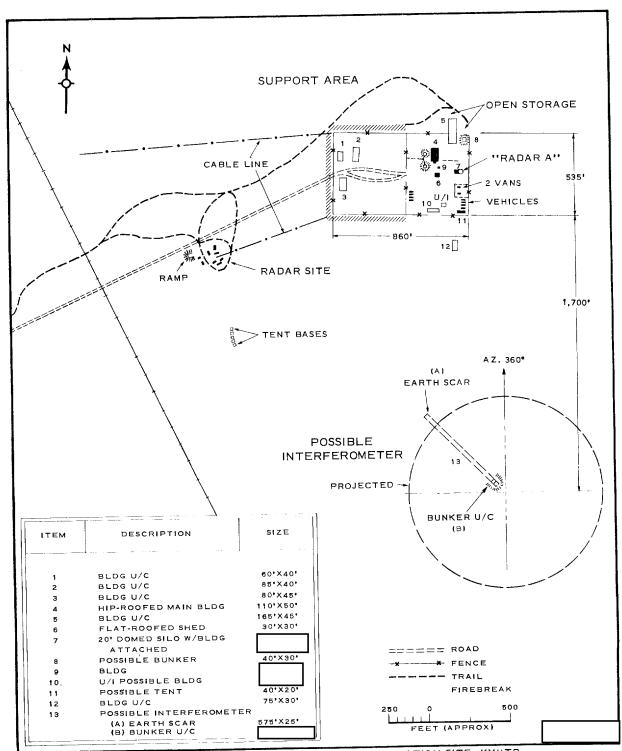


FIGURE 20. LAUNCH COMPLEX "C" INSTRUMENTATION SITE, KYMTR.

25X1\_

25X1D

25X1

- 27 -

25X1

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25X1D

25X1D

25X1C

25X1

25X1D

25X1D

#### TIMTR SITES

Tyura Tam Rangehead Site. The interferometer at the Tyura Tam
Rangehead, one of the older sites in the USSI is visible on photography
of excellent quality. All construction at the site apparently has been
completed because no changes occurred in the interferometer
Figures 21 and 22 do not show either the circumferential
road or the fence found at Sary Shagan. An eart i scar
forms the perimeter of the leveled area. The support area for this inter-
ferometer has been designated the Instrumentation Control Center for
Tyura Tam, 3/ A possible function of range safety has been delegated to
this interferometer.
The interferometer lies between its support area and the launch pad
at Launch Complex "A". The only correlation between the launch pad and
the interferometer is that a line extended through and beyond the two un-
identified towers on the launch pad would bass through the center of the
interferometer.
lika Site. The Uka instrumentation site is located on the Kamchatka
Peninsula. Major changes have occurred at this site when it
was first observed on photography (Figures 2) and 24). 4/ Although the
quality of the photography is poor, it reveals an expansion of the
support area to more than twice its former size and the presence of a
dome 110 feet in diameter and of a tall lattice to wer. The latter two items
correspond, respectively, to the 110-foot dome at Instrumentation Site 6
and to the numerous lattice towers at the SSATC
Yelovka Site. This instrumentation site is also located on the Kam-
chatka Peninsula. Like the site near Uka, it is associated with terminal
range activity of the TEMTR. Obliquity of the photography prevents
determination of any changes in the site similar to those at the Uka Site.
Like the Uka site, no circular road or leve ed area are visible on the
photography (Figures 25 and 26). As shown in Table 1, only one "Radar
A' is present, as at Tyura Tam and Uka.

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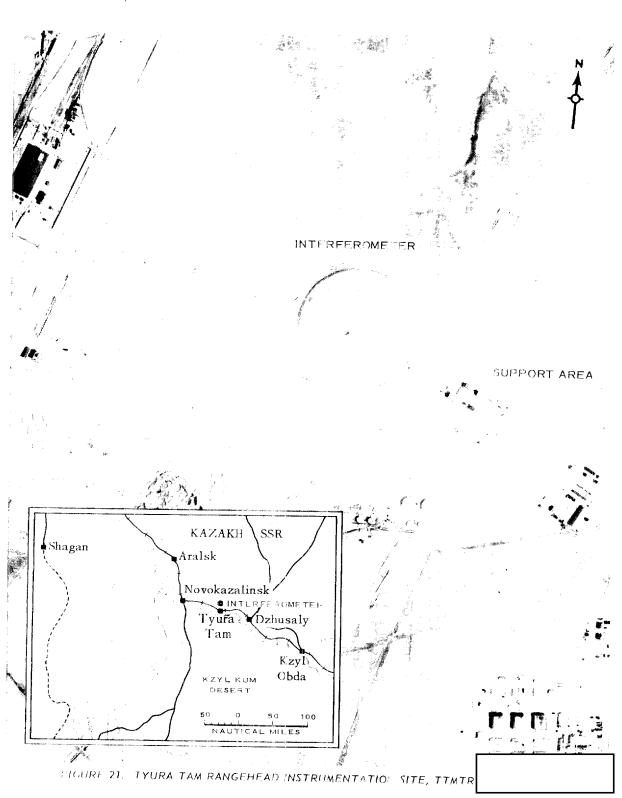
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#### KHUTOR SITE

The Khutor instrumentation site (Figures 27 and 28) more closely resembles Instrumentation Site 1 at the SSATC than any other site described in this report. First, it is comparatively isolated from known missile activity. Second, a rhombic antenna farm appears to be in the vicinity. Although no antennas can be identified, rhombic-shaped clearings in a wooded area appear similar to other rhombic antenna farms observed. A nearby KRUG site may or may not be associated with the function of the interferometer.

- 29 -



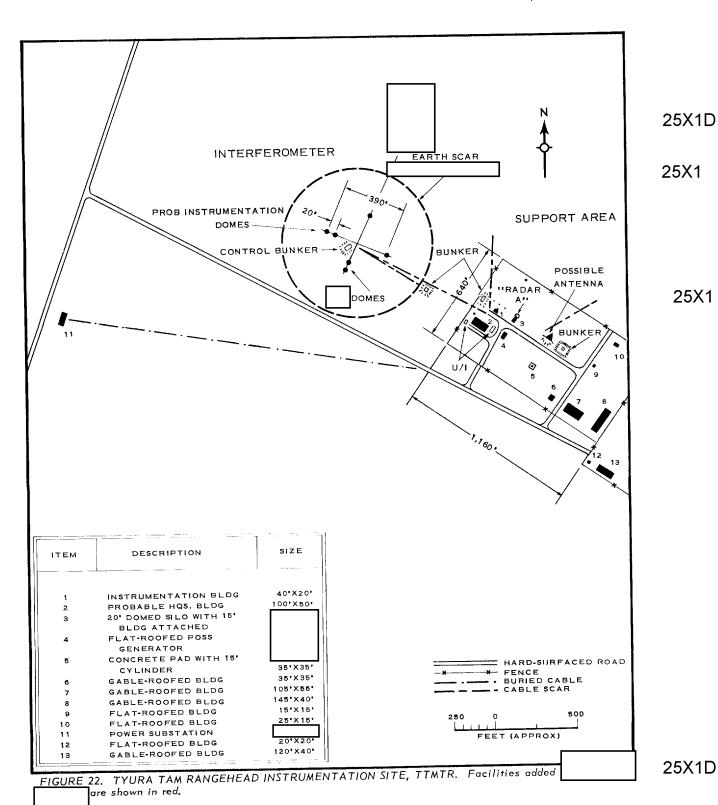
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25X1

25X1C

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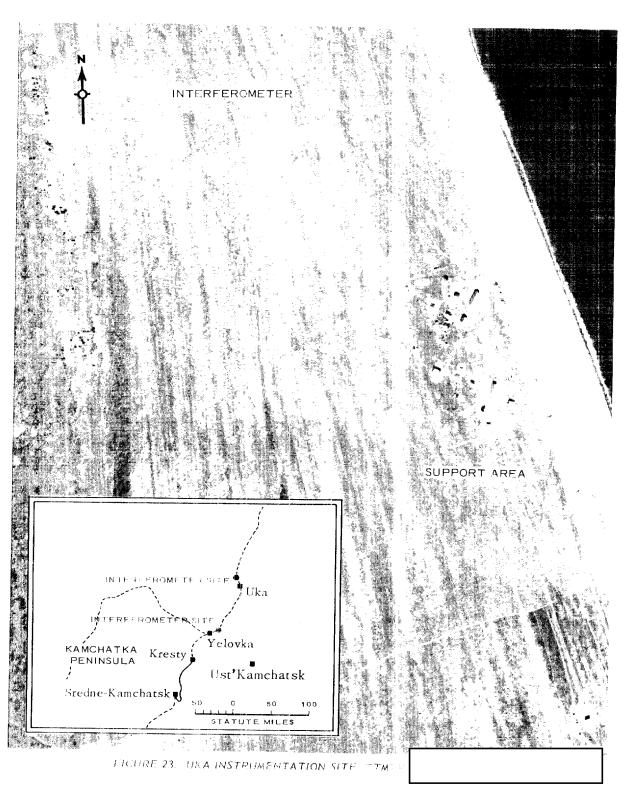
- 31 -

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25X1D

25X1<sup>--</sup>

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25X1C

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25X1C

25X1

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25X1D FENCE LINE PROB INSTRUMENTATION DOMES FEET (APPROX) INTERFEROMETER SUPPORT BUNKER U/C AREA TO SELF-SUPPORTING LATTICE 25X1D TOWER (270' HIGH) UKINSKAYA GUBA (3,000 FT FROM SUPPORT AREA) GROUND SCAR 4 VEHICLES BUNKER DEPRESSION 30' X 50' AIRFIELD TOTAL LENGTH 6,300' ITEM DESCRIPTION SIZE TWO-BAY BLDG U/C FLAT-ROOFED BLDG 20'X10' GABLE-ROOFED BLDG 25'X20" 2 GABLE-ROOFED BLDG5 25'X25' GABLE-ROOFED BLDG 95'X30' GABLE-ROOFED BLDG 30'X25' 90º DIA MOUND GABLE-ROOFED BLDG W/2 VENTS POSS UNDERGROUND TANK 10 GABLED, MONITOR-ROOFED BLDG 45°X40° EXCAVATION 20'X20'

25X1

13 14

15

16

18

19

20

GABLE-ROOFED BLDG GABLE-ROOFED BLDG

20' DOMED SILO W/BLDG

GABLE-ROOFED, T-SHAPED

FIGURE 24. UKA INSTRUMENTATION SITE, TTMTR. Facilities added

SHED-ROOFED BLDG

ATTACHED

BLDG

BUNKER

TOWER

DOME

25X1D

25X1D

25X1D 25X1

are shown in red.

- 33 -

65'X30'

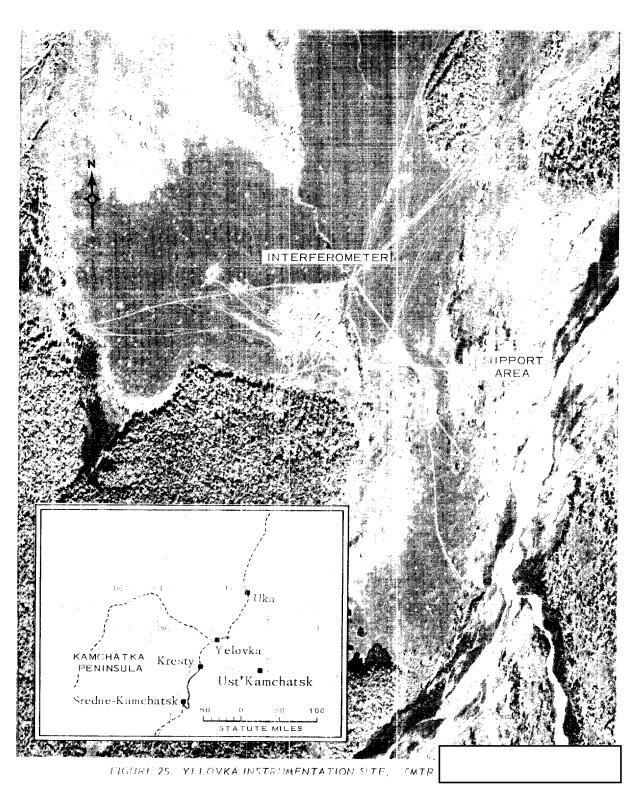
105X10E

30'X20' 200° HIGH

110' DIA

60\*X20\*

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25X1D

25X1C

25X1

25X1D

25X1D

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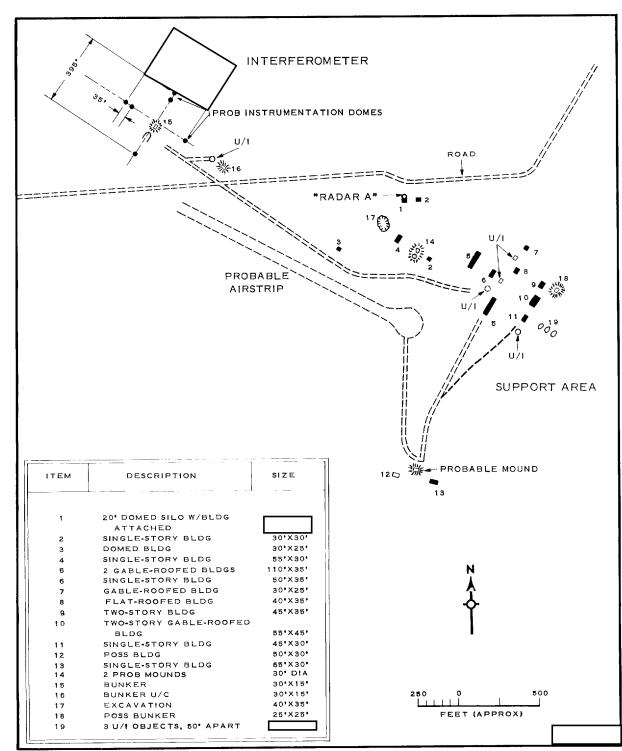
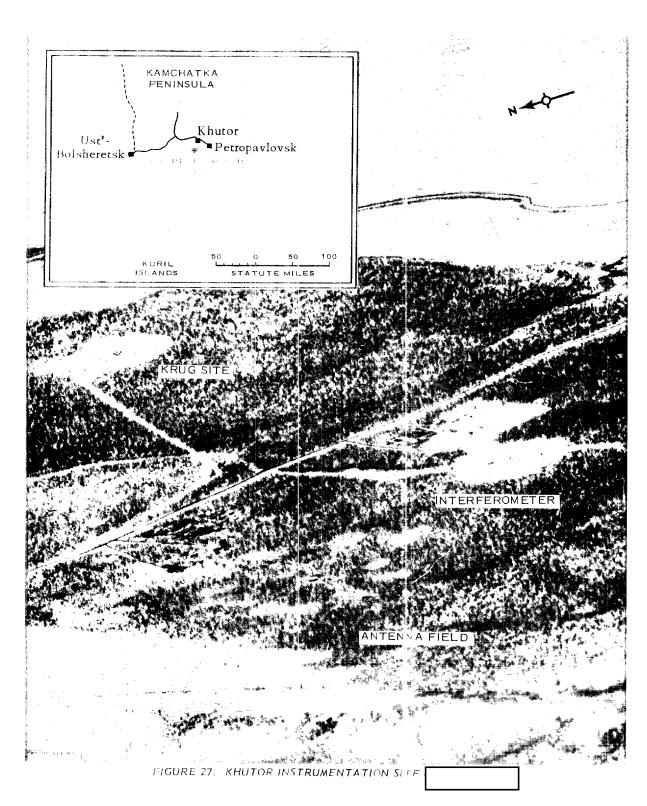


FIGURE 26. YELOVKA INSTRUMENTATION SITE, TTMTR.

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25X1



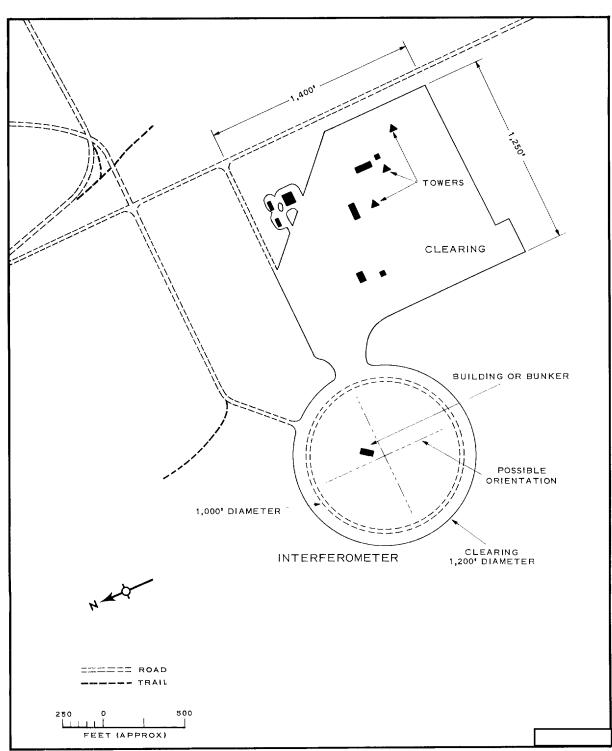


FIGURE 28. KHUTOR INSTRUMENTATION SITE.

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25X1

25X1C	SECRET	

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#### TABLE 1. COMPARISON OF INTERFEROMETERS, USSR

,	Site	Coordinates	Overall Length of Crossarms (Feet)	Diameter of Road (Feet)	Diameter of Fence (Feet)	Number of "Radar A s"	Orientation of Northing Crossarm (Degrees)	Inner Bunker	Outer Bunker	Description of Crossarms	Remarks	
•	SSATC											
	Site 1	45-54N 73-38E	400	1,005	1,250	None	350	70 by 45 feet with ramped entrance 20 feet wide	Possible	Crossarms are situated on a level area 640 feet square. They appear complete, although no domes or instruments are visible.	Site contains four rhombic antennas oriented toward Moscow and a circular pad with probable instrumentation vehicles.	
25X1E	Site 4	45-58N 72-16E	See description of crossarms	960	1,100	5		Possibly com- plete; ramped entrance	Cloud covered	Crossarms consist of leveled earth. Each arm is 500 feet long and 100 feet wide. No devices can be identified.	Microwave site is under construction near the support area.	
	Site 5	45-51N 71-28E	Unknown	Approx. 1,000	Cleared area approx. 1,200	Unknown	Unknown	Unknown	Unknown	Cannot be identified.	No unique features can be identified because of cloud cover.	
25X1I	Site 7	46-36N 70-50E	See description	1,000	1,185	3		Under construc- tion; ramped entrance	Yes	May be under construction; debris throughout the area. Crossarms consist of leveled earth. Each arm is 460 feet long and 60 feet wide. No domes or devices can be identified.	Site contains a Token-type radar with associated vehicles, and a microwave installation.	
	Site 8	46-54N 70-55E	400	1,000	1,200	Unknown	Approx. 20	Possible	Unknown	Four objects or scars can be seen, each 200 feet from the center, which may be the ends of the arms. Crossarms are centered on a 600-foot square, level ground pattern.	Much larger than Site 7, this site also contains a Token radar with associated vehicles, a microwave installation, and an airstrip.	
-	Site 9	46-50N 71-55E	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Interferometer is not visible. Site has been identified by the support area.	A microwave installation and an airstrip are adjacent to the area.	
. 25X1	Site 11	46-39N 72-37E	400	1,000	1,200	Unknown		Unknown	Unknown	Four scars or mounds can be seen, each 200 feet from the center, which may be the ends of the arms.	A microwave installation is adjacent to the area.	
r	Site 12	46-24N 72-34E	Unknown	Approx 1,000	Unknown	5	Unknown	Unknown	Unknown	Cannot be identified.	A possible microwave installation and an area of ground scarring are adjacent to the area.	
-	KYMTR											25X1
	Lake El'ton	49-10N 46-52E	Unknown	Under construction	None	1	Unknown	Approx. ramped entrance	Unknown	Crossarms cannot be identified, but a level ground pattern approximately 600 feet square can be seen in the circular area.	Support area similar to that of the Uka Site	25X1 25X1D
25X1I	Verkhniy Baskunchak	48-12N 46-12E	400	1,050	None	2		Approx. 60 by 15 feet; ramped entrance	Unknown	Three domes, 25 feet apart, are on two adjacent arms; a single dome is on the other two arms.	Support area similar to that of the Uka Site	25X1D
	Complex "C"	48-37N 46-16E	None	None	None	1	360	Under construc- tion; ramped entrance	None	No crossarms or domes have been constructed.	Support area similar to that of the Uka Site and to the Tyura Tam interferometer site.	25X1D
25X1I	) TTMTR											
· 25X1	Tyura Tam	45-54N 63-20E	390	None	Earth scar	1		Complete; ramped en- trance	Yes	Two domes, 20 feet apart, are on two adjacent arms; a single dome is on each of the other arms.	The interferometer is colocated with the Instrumentation Control Center for the range and may have a function of range safety.	25X1
	Uka	57-51N 162-50E	400	None	None	1		Complete; 60 by 20 feet; ramped entrance	Yes	Nearly identical to those at the Tyura Tam Site; length differs by 10 feet.	This site has been enlarged A 110-foot dome, a tall lattice tower, and numerous support buildings have been added.	25X1D
25X1	Yelovka	56-57N 161-15E		None	None	1		Complete; 30 by 15 feet; ramped entrance	30 by 15 feet	Identical to those at the Uka and Tyura Tam Sites.	No indication of local communications or microwave at the site.	
r	KHUTOR	53-05N 158-20E	Unknown	Approx. 1,000	Clearing 1,200	Unknown	Unknown	Possible	Unknown	Cannot be identified.	A Krug site is located near the inter- ferometer. A number of rhombic clearings indicate the probability of rhombic antennas.	
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	NPIC/R-1033/62		
	DOCUMENTS		25)
25X1C	1. CIA. PIC/JR-1010/61, Antimissile Complex, Sary Shaga:	n, USSR, Apr 61 (SECRET	25>
25X1C	2. CIA. PIC/JB-1016/60, Kapustin Yar/Vladimirovka Missi (SECRET	le Test Center, USSR, 1 Dec 60,	
25X1C	3. CIA. PIC/JB-1011/61, Missile Test Center, Tyura Tam,	USSR, Apr 61 (SECRET	25>
25X1C	4. NPIC. NPIC/B-1007/61, Missile Tracking Station Near Sep 61 (SECRET	Uka, Kamchatka Peninsula, USSR,	
	REQUIREMENT		
	CIA. DDI/OSI/R-75/61		
	NPIC PROJECT		
	JN-143/61	,	
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